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**P.O. Box 1450**  
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7590 03/23/2006

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmittal.

Customer No. 022844  
 Gary A. Smith  
 Ford Global Technologies, LLC  
 Suite 800 South  
 330 Town Center Drive  
 Dearborn, MI 48126

**Certificate of Mailing or Transmittal**  
 I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop **ISSUE FEE** address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Donna J. Seibert	(Depositor's name)
<i>Donna J. Seibert</i>	(Signature)
January 3, 2007	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/020,362	10/30/2001	Paul Joseph Stewart	200-1772	2674
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**TITLE OF INVENTION: SYSTEM AND METHOD OF DIRECT MESH MANIPULATION**

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$300		\$1700	06/23/2006

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, KIMBINH T	2628	345-420000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,  
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Gary Smith

2

3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

**PLEASE NOTE:** Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE  
 FORD MOTOR COMPANY

(B) RESIDENCE (CITY AND STATE OR COUNTRY)  
 DEARBORN, MICHIGAN

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☒ Issue Fee  
☒ Publication Fee (No small entity discount permitted)  
☐ Advance Order - # of Copies

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.  
☐ Payment by credit card. Form PTO-2038 is attached.  
☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 06-1510 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

**NOTE:** The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature

David B. Kelley

Date January 3, 2007

Typed or printed name

Registration No. 33,718

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or any suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Patent Application of:  
Paul J. Stewart

Application No.: 10/020,362

Confirmation No.: 2674

Filed: October 30, 2001

Art Unit: 2628

For: SYSTEM AND METHOD OF DIRECT MESH  
MANIPULATION

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Examiner: K. T. Nguyen

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

The Applicant's representative recently became aware that the Notice of Allowance for the above referenced matter, dated March 23, 2006, was returned to the USPTO as undeliverable on March 30, 2006 (copy of returned envelope attached), since it was sent to an old address. The Notice of Allowance was resent by the USPTO on October 2, 2006 to the old address, and again returned to the USPTO as undeliverable on October 23, 2006 (copy of returned envelope attached). It should be noted that this second mailing did not include a new mailing date, however, the envelope was date stamped October 2, 2006.

The Applicant's representative moved in January 2005, and filed an address change for other applications associated with the Applicant's customer number. The above application was filed in 2001, and did not include an associated customer number and so the address was

inadvertently unchanged. However, a check of PAIR reveals use of the current address for applicant's representative.

The Applicant submits that the payment of the issue fee within three months of the second mailing is a timely submission, and respectfully requests such consideration.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 07-1180, under Order No. FGT-10002/44.

Dated: January 3, 2007

Respectfully submitted,

Electronic signature: /Beverly M. Bunting/  
Beverly M. Bunting  
Registration No.: 36,072  
GIFFORD, KRASS, GROH, SPRINKLE,  
ANDERSON & CITKOWSKI, P.C.  
2701 Troy Center Drive, Suite 330  
Post Office Box 7021  
Troy, Michigan 48007-7021  
(248) 647-6000  
(248) 647-5210 (Fax)  
Attorney for Applicant



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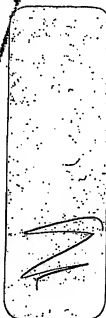
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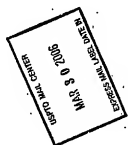
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## NOTICE OF ALLOWANCE AND FEE(S) DUE

7590

03/23/2006

Beverly M. Bunting  
Gifford, Krass, Groh, Sprinkle, et al.  
Suite 400  
280 N. Old Woodward Avenue  
Birmingham, MI 48009-5394

EXAMINER

NGUYEN, KIMBINH T

ART UNIT

PAPER NUMBER

7528

DATE MAILED: 03/23/2006

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,362	10/30/2001	Paul Joseph Stewart	200-1772	2674

TITLE OF INVENTION: SYSTEM AND METHOD OF DIRECT MESH MANIPULATION

APPL. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$300		\$1700	06/23/2006

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

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If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

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B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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7590 03/23/2006  
Beverly M. Bunting  
Gifford, Krass, Groh, Sprinkle, et al.  
Suite 400  
280 N. Old Woodward Avenue  
Birmingham, MI 48009-5394

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	(Depositor's name)
	(Signature)
	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/020,362	10/30/2001	Paul Joseph Stewart	200-1772	2674
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TITLE OF INVENTION: SYSTEM AND METHOD OF DIRECT MESH MANIPULATION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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unprovisional	NO	\$1400	\$300		\$1700	06/23/2006
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EXAMINER	ART UNIT	CLASS-SUBCLASS
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NGUYEN, KIMBINH T	2628	345-420000
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1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

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☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

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(A) NAME OF ASSIGNEE

(B) RESIDENCE (CITY AND STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee  
☐ Publication Fee (No small entity discount permitted)  
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☐ Payment by credit card. Form PTO-2038 is attached.  
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

**NOTE:** The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,362	10/30/2001	Paul Joseph Stewart	200-1772	2674

7590

03/23/2006

Beverly M. Bunting  
Gifford, Krass, Groh, Sprinkle, et al.  
Suite 400  
280 N. Old Woodward Avenue  
Birmingham, MI 48009-5394

EXAMINER

NGUYEN, KIMBINH T

ART UNIT

PAPER NUMBER

2628

DATE MAILED: 03/23/2006

**Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)**  
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 794 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 794 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.



# **Notice of Allowability**

Application No.	Applicant(s)	
10/020,382	STEWART ET AL.	
Examiner	Art Unit	
Kimbinh T. Nguyen	2871	

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address—  
All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included  
herein (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. THIS  
NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS. This application is subject to withdrawal from issue at the initiative  
of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 01/08/03.
2. ☒ The allowed claim(s) is/are 1-18.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of the:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the  
International Bureau (PCT Rule 17.2(a)).  
\* Certified copies not received; \_\_\_\_\_

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements  
noted below. Failure to timely comply will result in ABANDONMENT of this application.  
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF  
INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.  
(a) ☐ Including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-945) attached  
1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.  
(b) ☐ Including changes required by the attached Examiner's Amendment / Comment or in the Office action of  
Paper No./Mail Date \_\_\_\_\_.  
Identifying indicia such as the application number (see 37 CFR 1.54(c)) should be written on the drawings in the front (not the back) of  
each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(f).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the  
attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## **Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-945)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### DETAILED ACTION

1. This action is responsive to amendment filed 01/06/06.
2. Claims 1-18 are pending in the application.

#### *Allowable Subject Matter*

3. The following is an examiner's statement of reasons for allowance:

Claims 1, 5, the prior art does not teach a user using the computer system to convert the CAD model into a mesh model, and iteratively evaluate the mesh model until a predetermined response is generated by performing a computer-aided engineering (CAE) analysis of the mesh model; modifying a design parameter based on the CAE analysis, and updating the mesh model to include the modified design parameter by direct mesh manipulation of the mesh model using Dirichlet parameter distribution to determine deformation of the surface of the mesh model, so that the evaluation of the mesh model is used in the design of the product.

Claim 9, the prior art does not teach determining whether to vary a predetermined design parameter based on the CAE analysis; modifying the predetermined design parameter, if determined to vary the design parameter; updating the mesh model to include the modified design parameter using direct surface manipulation (DSM) of the mesh model, wherein a surface of the mesh model is described as an elastic sheet and linear elastic finite element analysis is applied to determine a displacement of the surface; and modifying the surface of the mesh model by the amount of the displacement; and using the evaluation of the mesh model in the design of the product.

Claim 12, the prior art does not teach determining whether to vary a predetermined design parameter based on the CAE analysis; modifying the predetermined design parameter, if determined to vary the design parameter; updating the mesh model to include the modified design parameter using direct surface manipulation (DMM) of the mesh model, wherein a surface of the mesh model is embedded within a lattice structure having a volume, a point within the volume is modified and finite element analysis is applied to determine a displacement of the node within a lattice; and modifying the surface of the mesh model by the amount of the displacement; and using the evaluation of the mesh model in the design of the product.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

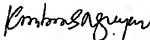
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimbinh T. Nguyen whose telephone number is (571) 272-7644. The examiner can normally be reached on Monday to Thursday from 7:00 AM to 4:30 PM. The examiner can also be reached on alternate Friday from 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached at (571) 272-7664. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Art Unit: 2671

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

March 17, 2006



**KIM H.T. NGUYEN**  
**PRIMARY EXAMINER**